The \texttt{count1to} package$^*$

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\textbf{Abstract}

This package sets \texttt{\count1} to \texttt{\count8} with the values of page to \texttt{subparagraph}. \texttt{\count9} is used to flag odd pages. The values of these counters are displayed and written in the .dvi file by \TeX{} and can later be used to select the pages of certain parts of the document for printing if the device driver supports this.

It also gives access to the total number of pages of the document via the label \texttt{TotalPages}.

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\section{Introduction}

Most of the time users want to print only certain parts of a document; but these can only be selected by using the page numbers of these parts with most device drivers. This can be difficult or impossible if pages in different parts of the document have the same number—e.g. in the frontmatter and the first text pages (iii vs. 3).

\TeX{} provides an easy solution to this problem: whenever a page is completed by the output routine and shipped out via \texttt{\shipout}, it displays the values of \texttt{\count0} to \texttt{\count9} on the display (e.g. [1]) and writes them to the .dvi file.

$^*$The version number of this file is v1.22, last revised 1999/06/08.

The name \texttt{count1to} is a tribute to the $8+3$ file-naming convention of certain “operating systems”; strictly speaking it should be \texttt{count1to9}.

$^\dagger$This document has 7 pages.
"The first ten \count registers, \count0 to \count9, are reserved for a special purpose: \TeX displays these ten counts on your terminal whenever outputting a page, and it transmits them to the output file as an identification of that page. The counts are separated by decimal points on your terminal, with trailing `.0' patterns suppressed. Thus, for example, if \count0=5 and \count2=7 when a page is shipped out to the dvi file, and if the other counters are zero, \TeX will type `[5.0.7]'. Plain \TeX uses \count0 for the page number, and it keeps \count1 through \count9 equal to zero; that is why you see `[1]' when page 1 is being output. In more complex applications the page numbers can have further structure; ten counts are shipped out so that there will be plenty of identification."[2, p. 119]

Surprisingly, until recently there existed no package for \LaTeX that used these \counters although some drivers allow the selection of pages based on other \countst h e n \count0 (e. g. \emTeX). This package is the solution: It uses the everyshi package[3] to set \count1 to \count9 before each \shipout with these values:

<table>
<thead>
<tr>
<th>\count</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>relative page number (set by \LaTeX)</td>
</tr>
<tr>
<td>1</td>
<td>absolute page number</td>
</tr>
<tr>
<td>2</td>
<td>number of current \part</td>
</tr>
<tr>
<td>3</td>
<td>number of current \chapter (0 with article class)</td>
</tr>
<tr>
<td>4</td>
<td>number of current \section</td>
</tr>
<tr>
<td>5</td>
<td>number of current \subsection</td>
</tr>
<tr>
<td>6</td>
<td>number of current \subsection</td>
</tr>
<tr>
<td>7</td>
<td>number of current \paragraph</td>
</tr>
<tr>
<td>8</td>
<td>number of current \subparagraph</td>
</tr>
<tr>
<td>9</td>
<td>1 on odd pages, 0 on even pages\footnote{1}</td>
</tr>
</tbody>
</table>

\count1to also works with classes that do not define some or all of the sectioning commands and their counters, like letter. Although it is of somewhat little use then :-).

A note for users of this package: When you select the pages of some part of your document with a lower structure than \chapter, remember that only \parts and \chapters start on a new page; if you want to print a complete \section, you should also select the first page of the next \section. Also note that \TeX ships out the values of the counters instead of their visual representation (produced with \the\counter), so appendix A sets \count4 to 1 in the article class.

A note for developers of device drivers: Please add support for \count1 to 9 to your programs. It would also be nice if users could easily select the next page(s) after a certain count (something like `*.*.*.*.2+1.*' should be possible for selecting all pages with \count4 \mapsto \section = 2 plus the first page of section 3).

\footnote{1If you have a better application for \count9, let me know.}
ble to provide the total number of pages of the document (as opposed to the “number” on the last page provided by the \lastpage package[1]). By referencing the label TotalPages (e.g. by \ref{TotalPages}) you get the total number of pages the document had at the last run of \LaTeX. If you want to use this feature, you should load \countlto as the last package in your document because \countlto executes some code at \end{document} and has to be sure that its code is the last code executed there.

2 Options

The package has no options.

3 Required packages

The package requires the everyshi package[3].

4 The implementation

\begin{verbatim}
\@countItoIX@ifs \@countItoIX@ifs is used to set all these \ifs at \begin{document}. It is undefined after use to save some space.
10 \newcommand*{\@countItoIX@ifs}{
11 \@ifundefined{c@part} {}{\@have@parttrue}
12 \@ifundefined{c@chapter} {}{\@have@chaptertrue}
13 \@ifundefined{c@section} {}{\@have@sectiontrue}
14 \@ifundefined{c@subsection} {}{\@have@subsectiontrue}
15 \@ifundefined{c@subsubsection} {}{\@have@subsubsectiontrue}
16 \@ifundefined{c@paragraph} {}{\@have@paragraphtrue}
17 \@ifundefined{c@subparagraph} {}{\@have@subparagraphtrue}
18 }
19 \AtBeginDocument{\@countItoIX@ifs\let\@countItoIX@ifs\undefined}
\end{verbatim}

\@countItoIX@bugfix

The current version of \LaTeX has the “feature” that only the first level of counters associated with a counter via the optional argument of \newcounter is reset when the counter is stepped; so when you start a new chapter, the number for the subsection is not reset. This is normally no problem, but with this package, it is: If this bug is not fixed or worked-around, then whenever you use \subparagraph or some other lower sectioning command, and after that a sectioning command that is at least two
levels higher (e.g. \subsubsection), the value of \subparagraph would
not be reset and would still be displayed and shipped out. So we have to
associate all lower-level sectioning commands with the higher levels. This
is done via \@addtoreset at \begin{document}. \@countItoIX@bugfix is
undefined after use to save some space.

\newcommand*{\@countItoIX@bugfix}{
\if@have@part
   \@addtoreset{section} {part}
   \@addtoreset{subsection} {part}
   \@addtoreset{subsubsection}{part}
   \@addtoreset{paragraph} {part}
\fi
\if@have@chapter
   \@addtoreset{subsection} {chapter}
   \@addtoreset{subsubsection}{chapter}
   \@addtoreset{paragraph} {chapter}
\fi
\if@have@section
   \@addtoreset{subsubsection}{section}
   \@addtoreset{paragraph} {section}
\fi
\if@have@subsection
   \@addtoreset{paragraph} {subsection}
\fi
\if@have@subsubsection
   \@addtoreset{subparagraph} {subsubsection}
\fi
\AtBeginDocument{\@countItoIX@bugfix\let\@countItoIX@bugfix\undefined}

\@countItoIX@shipout \@countItoIX@shipout is used for setting \count1 to \count9 at each
\shipout. \newcommand*{\@countItoIX@shipout}{
\count1 is the absolute page number, which we have to maintain by our-
selves.

\global\advance \count1 by 1 \count2 to \count8 are set with the values of \part to \subparagraph, if
these commands are defined.\footnote{We should probably also check the value of secnumdepth, but I don't think this is
necessary.}

\if@have@part \count2{value(part)} \fi
\if@have@chapter \count3{value(chapter)} \fi
\if@have@section \count4{value(section)} \fi
\if@have@subsection \count5{value(subsection)} \fi
\if@have@subsubsection \count6{value(subsubsection)} \fi
\if@have@paragraph \count7{value(paragraph)} \fi
\if@have@subparagraph \count8{value(subparagraph)} \fi
\count9 is set to 1 on odd pages and to 0 on even pages.
57 \ifodd\count1\count9=1 \else\count9=0 \fi
58 }
59 \EveryShipout{\@countitoIX@shipout}

\textbf{TotalPages}

The label \texttt{TotalPages} is set on the \textit{absolute} last page of the document and holds the \textit{total} number of pages of the document, i.e. the value of \texttt{\count1}. But before we write the value to the auxfile we call a \texttt{\clearpage} to force all pending floats to be output. To do this we have to be sure to be the last macro called by \texttt{\AtEndDocument}—but this is nearly impossible to assure (see the troubles the \texttt{lastpage} package\cite{lastpage} goes through to achieve this), so we try to do our very best and set our entry for \texttt{\AtEndDocument} at \texttt{\begin{document}} by using \texttt{\AtBeginDocument}.

60 \AtBeginDocument{%
61 \AtEndDocument{%
62 \clearpage
63 \immediate\write\@mainaux{\string\newlabel{TotalPages}{{\the\count1}{\the\count1}{}}}%
64 }%
65 }%
66 }%\langle\textbackslash package\rangle

\section{Acknowledgements}

As usual Rebecca Stiels improved the quality of this documentation. Rolf Niepraschk (niepraschk@ptb.de) provided the idea and the first implementation of the \texttt{TotalPages} label.

\section*{References}

[1] Jeff Goldberg. The \texttt{lastpage}-package. CTAN:\texttt{tex-archive/macros/latex/contrib/other/lastpage}. \LaTeX\ package.


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Numbers written in italic refer to the page where the corresponding entry is described, the ones underlined to the code line of the definition, the rest to the code lines where the entry is used.

Symbols
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\@countItoIX@ifs .................. 10
\@countItoIX@shipout ........... 48
\@have@chaptertrue ............. 12
\@have@paragraphtrue .......... 16
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Change History

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v1.01
  General: Documentation improved ........ 1
v1.02
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  after usage ........................ 4
  \@countItoIX@ifs: destruct after usage 3
  General: Documentation improved ........ 1
  fixed typos ........................ 1
v1.03
  General: Fixed use of \newline in title. ............... 1
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  \@countItoIX@ifs: \setboolean ..................... 3
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  General: \newboolean  ........ 3
  require \ifthen ............ 3
  \TotalPages: new ........... 5
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  use \ifthen ....................... 4
  \@countItoIX@ifs: don't use \ifthen ..................... 3
  \@countItoIX@shipout: don't use \ifthen ..................... 4
  General: \newif again ........ 3
  Documentation improved ..... 1
  don't require \ifthen ........... 3
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